☞Any person who takes the paper regularly from the post-office, whether directed to his name or whether he is a subscriber or not, is responsible for the pay.

The courts have decided that refusing to take newspapers from the post-office, or removing and leaving them uncalled for, is prima facie evidence of INTENTIONAL FRAUD.

## FIRELIGHT.

Not summer's noontide glory
Infolding mountain hoary,
A breadth of woven gold,
Nor moonbeams as they quiver
At midnight on the river;
Nor starlight pure and cold;

Nor glare of lamps revealing
The giddy mazes wheeling,
Of feet that never tire—
Can rival in their splendor
That mystic charm and tender,
A trembling, fitful fire.

For while the gay light dances
Upon the wall, what fancies
Come dancing over the soul—
Come quicker yet and quicker,
The more the bright tongues flicker
In lightnings from the coal.

Then palaces are builded,
And days unborn are gilded
With visionary gleam;
'Tis then the memory passes
Beneath the churchyard grasses
In retrospective dream.

Ah, Firelight, weird, enchanting,
Bright hopes and dreams implanting,
Most sweet of lights and blest,
Beneath thy benediction,
Hearts weary with life's friction
Can find a moment's rest.

—*Chambers' Journal.*

## GIGANTIC BEARS.

### The Grizzly and the Silver Tip, the Black, the Brown, Etc.

**Plenty of Them in the Northwestern Territories—A Fierce Encounter Where Man and Bear Both Went Over the Precipice.**

The big grizzly bears found all through the canons of the Rocky Mountains and spurs of the great range seldom descends from lofty altitudes, where they manage year in and year out to eke out a subsistence near the perpetual snow line. An old and experienced hunter has said that "any man's a fool to go in arter bear alone." The bruins of the East and the bruins of the West are almost totally different animals. The "Ursa Majors" of this latitude are monstrous in size, endowed with ugly dispositions and prodigious strength, and as for grit, they dispute—and very often successfully, too—the sovereignty of the mountains and forests with the king of American beasts, the mountain lion. Hunters disagree upon the point of how many different species of the bear tribe we have in the Northwest. There are at least three distinct types of the family in Montana, namely, the grizzly, brown and black bear. Beside these, there are also gray bears, cinnamon bears, and the Rocky Mountain grayback. The true gray is seldom, if ever, seen now as high as the forty-fifth parallel, and as far east as the main divide; the cinnamon is simply a cross between the brown and black bears, and the mighty silver tip is neither more or less than a mongrel of the brown and grizzly, partaking strongly of the nature of the two, particularly of the latter. In fact, I think I am justified in asserting that all the members of the species intermarry, and that the silver tip is the king of the family. This big fellow, springing from the grizzly and the brown, combines all the ferocity and tough strength of the former with the agility and stubbornness of the latter, each distinctive trait being more prominent in him, and possessed to a greater degree than by the very animals from which he borrows them. The silver tip is unquestionably the ruler of the family, by reason of his great size and belligerent disposition. Lewis and Clarke, in their narrative of their journey through this region nearly one hundred years ago, speak of meeting not only brown and black bears, but also numerous white bears, who made it perilous traveling at times for various members of that bold pioneer party. There are no white bears in Montana, Dakota, Idaho, or the bordering possessions of the Canadian Northwest. Probably the albinos referred to were cinnamon bears, who, early in the spring after coming out of a winter's sleep, take upon themselves a dirty, yellowish-brown color, which, at a distance and in a snow-covered country, might readily be mistaken for white bears whose coat of fur badly needed a bath. In one place, after coming upon a so-called white bear, the journal describes him as possessing small black eyes (almost like jet beads), a hide of bright yellowish brown, the front of the fore-legs near the feet being quite black, and the animal itself of a ferocious and warlike nature. This description of the white bear of 1804-5 tallies with the cinnamon bear of 1887, which makes him about the same ugly customer that he was a hundred years ago. There are few black bears in this immediate vicinity, most of them inhabiting the western slope of the Rocky Mountains and the forests that thence continue to the Pacific Ocean.

The woods of Oregon and Washington are overrun with black bears. The largest black fellow I ever saw in my life was in the woods of Washington Territory, near Mount Rainier. The black bears of Montana, as well as the cinnamon, as a rule inhabit low places, such as creek and river bottoms, willow marshes, and timbered spots, but grizzlies and silver tips stick to high altitudes, from which even hunger pressure seldom drives them. Grizzlies are generally credited with highly-cultivated appetites for carnivorous food. Camp-fire stories excitedly tell of the bloodthirsty diet these monsters habitually thrive upon, but were all the blood-curdling yarns aired around the cheerful blaze carefully sifted down for facts I am afraid that fully ninety per cent. of the grizzly stories would turn out to be fiction. I do not think a grizzly is carnivorous from choice. He seldom descends from his mountain home to the creeks and rivers in search of wild plums and chokeberries (the favorite diet of brown, cinnamon, and black bears), but prefers to remain aloft and feast upon the stores laid up for winter use by his industrious neighbors, the gophers and mountain squirrels. Pine nuts are plentiful high up, and then the grubs and worms found beneath old stones and moss-overgrown boulders are good enough for King Bruin while they last. When the nut, berry and plum supply runs short, none of the family hesitate to fall back upon a diet of pork, beef, mutton or venison. A recent report from the Highwoods, in the neighborhood of Arrow and Wolf creeks, says that more bears have been seen this year than for ten years past, and that quite a number of cattle have been killed by them of late. A few months ago, at Mullery's ranch, near Gorham, a big silver tip came down out of the mountains one night, invaded the hog pasture of that industrious ranchman, and in a very short time laid out no less than thirty fine porkers. The hogs squealed, made a great fuss, of course, and as long as there was a show of resistance the bear never stopped boxing their ears. One blow of his mighty paw was enough to kill a hog, and there is no telling where he would have stopped had he not been interrupted in this pleasant pastime.

The grayback of the Rockies is rather a different brute from his cousin of the Adirondacks and the Pennsylvania hills. Perhaps the Eastern members of this interesting family never weigh more than four hundred or five hundred pounds, but out this way many of the grizzlies and silver tips caught have touched the beam at one thousand and twelve hundred pounds and even greater. Mr. Charles Soper, of Bozeman, a thriving city a short distance west of here, is said to have shot one of the largest graybacks ever seen in the West. The hide was something tremendous. The beast having been killed late in the fall, at a time when he was plentifully supplied with "bear's grease," it would not be wide of the mark to estimate his weight when alive at sixteen hundred pounds. Certainly the enormous hide justified these figures, and the claws and head preserved would justly entitle him to the credit of being the father of the family.

As a proof of the wisdom of the old hunter's warning about "going in arter bear alone," the following narrative will best illustrate its truthfulness:

"A party of gold hunters started out from Deadwood some years ago to prospect the country to the north and west of that mining camp. The men in the party were 'old timers,' with one or two exceptions, and among the latter was a Swede, full of grit, who stood nearly seven feet in his stockings. The Swede, however, whose family name was Franck, was by no means a 'tenderfoot,' having dwelt some time in the Leadville mining camps and boasted that he had killed 'bar in his day,' and was afraid of 'no four-footed critter that roamed the mountains.' The party of twelve were climbing a steep mountain, darkness was coming on, and prospects of a supperless night were in view, when the seven-foot Scandinavian volunteered to push on ahead in the hopes of securing an elk, deer, or mountain sheep. The foreigner was a good shot with his rifle, had plenty of grit and courage, and his immense strength and powerful physique rendered it extremely improbable that he would find his match in the timber ahead. The hunter disappeared, and the others toiled on behind, climbing the steep ascent wearily and footsore. At one place the road wound around a steep precipice, the sheer descent of the cut basaltic walls on the left being something like a thousand feet. Far below the tops of giant pines could be discerned, but in the awful depth they appeared like stunted shrubs and bushes. Near the summit and to the right the free land broadened or widened out, and this was covered with a dense growth of willows and stunted pines, from which proceeded the most awful grumblings and howls imaginable. Just as the party appeared on the top all at once out from the stubble came retreating the big Swede, followed by an enormous silver tip, who was driving him slowly backward toward the edge of the precipice. The man was bleeding badly, nearly all of one side of his face being torn away, the result of a wicked blow from the huge paw of the vicious monster. The bear, on the other hand, was quite as badly wounded as his antagonist. His head was a mass of gore, the lower jaw was simply hanging by a few shreds, and one of his hind legs was broken. The Swede was backing slowly, holding in his right hand a large hunting knife, which every second he would plunge to the hilt in the shoulder of his shaggy foe. At one thrust of the Swede the bear caught him fairly with a return whack of his monstrous paw that must have broken the man's arm, for he quickly transferred the blade to his left hand, and gave back blow for blow as best he could. The denouement came so suddenly that the horror-stricken comrades could render no possible assistance. Even had they started on a run, they could not have reached their friend in time, and to risk a shot with a rifle would have been just as dangerous to the Swede as to the bear. Step by step the man was forced back, until he hung almost upon the edge of the precipice. There seemed no hope for him unless he could assume the aggressive in turn, and this could not be done, as the man was doing his utmost, and still the silver tip was getting the better of the fight. All at once the desperate animal raised his huge paw and brought it down with a terrific force upon the head of the man. The scalp was torn away by this last stroke and the poor fellow was blinded by his own blood. Again the bear struck him, and the Swede tottered on the brink with nothing in reach to lay his hands on by which he might save himself. Evidently with the desperation of death staring him in the face Franck did the only thing possible under the circumstances. As he was swaying backward and ready to go over he threw from him the useless knife, and, in despair of all hope, madly clutched the beast around the neck with both arms. The force of the last onslaught carried the animal too far, for the next moment both the silver tip and the man, in that awful embrace of death, went rolling over the frightful precipice together and were dashed into an unrecognizable mass on the rocks and pines hundreds of feet below. Franck's rifle was found in a bunch of quaking aspens, broken short off at the stock. There were no cartridges in the chamber, which proved that the seven-footer had certainly exhausted his magazine before drawing his knife, and that after he had shot all his shells the silver tip had insisted upon fighting at close quarters, which accounts for the broken stock and verifies the probability of the man clubbing his gun when the maddened beast rushed upon him. It was late in the fall when the encounter occurred, probably at a time when the monster was heavily equipped with fat, and, of course, the long keen knife would have to pass through a thick layer of "blubber" before encountering a vital part.—*Fort Keogh (M. T.) Cor. N. Y. Times.*

## THE AMERICAN MOOSE.

**Something About the Largest Representation of the Deer Family.**

As is well-known, the moose is the largest species of the entire deer genus, exceeding in proportions any other native ruminant quadruped in America, and when in full growth and vigor, in the best condition, these gigantic mammals, it is asserted, have been known to attain the enormous weight of two thousand pounds, and a reliable gentleman now living in Hartford, Conn., who has for many seasons stalked this particular game and bagged quite a number of large specimens, says that he killed a bull moose some years since in Nova Scotia that measured seven feet from the top of the withers to the sole of the foot, which is considerably taller than the elk or any other game animal on this continent.

Fifty years ago the range of the moose had a vast geographical amplitude, extending from the Atlantic to the Pacific entirely across the continent. But the expansion of the western settlements and the proclivities of the hunting population have caused a great diminution in this species of game and driven the wary beasts to seek more inaccessible cover in the remote north. Yet they are still found in Maine, Minnesota, Idaho, Montana, as well as in the unpopulated districts of the Canadian provinces and in British Columbia.

An old Chippewa guide, "Pe-to-Wan-Quad," who had hunted in the vicinity of Lake Huron ever since his boyhood, told a white traveler some years ago that during a severe winter many years before, when the snow was very deep and his family suffering for want of food, he went out alone upon snow-shoes to procure meat, and in a short time came upon the fresh tracks of seven moose, which he followed for three successive days, during which he killed every one of them, besides two black bears that attempted to join him in the chase toward the last of it. After his signal achievment in securing this large supply of meat he returned to his people, and taking out a party with sleds hauled it all home, and it sufficed for their subsistence during the remainder of the winter.

The moose is an awkward, clumsy-looking animal, with an uncommonly peculiar head and nose, ending in a muscular, prehensible lip termed "muffle," which they use in collecting food, and this appendage, when cooked, is regarded by hunters as a delicious bon morceau. The mouth is set well back from the lower extremity of the muffle, thus adapting it to their method of browsing upon the tender shoots of deciduous shrubs and trees, which constitute their staple forage the year round.

Moose are quite abundant upon the Yukon river, toward its sources in Alaska, as an exploration of that section by Whimpon in 1857 shows. Between latitudes 65 and 66 degrees north and longitude 146 degrees, he says: "This part of the river abounds in moose."

The appellation of "moose" is probably derived from an aboriginal source, as this identical synonym still obtains among the Chippewas on the northern borders, where those animals are most abundant.

In 1843 moose and elk were occasionally met with in the extensive forests of Lake Huron.

Moose have been killed near the Pacific coast a little south of Behring strait.—*Chicago News.*

## Points in a Good Horse.

A horse's head indicates his character very much as a man's does. Vice is shown in the eye and mouth; intelligence in the eye and in the pose, in the mobile nostril and active ear. The size of the eye, the thinness of the skin, making the face bony, the large, open, thin-edged nostril, the fine ear, and the thin, fine mane and foretop, are indicative of high breeding, and accompany a high-strung, nervous organization, which, with good limbs and muscular power, insures a considerable degree of speed in the animals. The stupidly lazy horse that drivers call a "lunkhead" has a dull eye, usually a narrow head and contracted poll. He is always a blunderer, forgets himself and stumbles on smooth ground, get himself and his owner into difficulty, calks himself, is sometimes positively lazy, but often a hard goer. He needs constant care and watchfulness on the driver's part. A buyer of equine flesh should be able to detect the good and bad qualities of the animal he contemplates purchasing. This valuable knowledge is only acquired by a careful study of the various parts of horse physiognomy.—*Farmer's Advocate.*

## Soldiering in Burmah.

Shortly after my enlistment our regiment was ordered to Burmah to subdue the natives. In addition to the English troops we had natives as well. The hostile natives were known as dacoits, and we had some very lively skirmishes with them. A friendly Buddhist priest informed us one night of the location of an enemy's camp, and a detachment was sent out to capture it. We surrounded them and they tried to fight their way out, and one big fellow came within three inches of splitting my head with his knife. We captured about thirty of them. Another time we attacked a little army of them who had taken up a position at the summit of a steep hill. They rolled big bowlders down upon us, and I barely escaped one that must have weighed about ten tons.—*Philadelphia Record.*

## CARDINAL MANNING.

**The Favorable Impression He Made on an American Visitor.**

Not much of the pomp and splendor of the Roman purple here, I thought, as I stood at the entrance of a large but severely plain house, of no particular style of architecture, within a short walk of the Houses of Parliament. Yet this was the episcopal residence—the titular palace of the Cardinal Archbishop of Westminster. I had some trouble in finding the place. A policeman who was sunning himself around the next corner said he had never heard of Cardinal Manning.

The door of the mansion was opened by a middle-aged woman, very plainly dressed. I entered a wide hall which was almost destitute of furniture. The woman who had admitted me opened a door to the right, and I found myself in a large well-lighted library, the sides of which were filled with book-cases reaching from the floor to the ceiling, and containing about 10,000 volumes of works in every department of literature, although theology, philosophy and history predominated.

The furniture of the Cardinal's library was of the plainest kind, consisting of an oblong table, half a dozen leather seat chairs, and a cheap carpet of a neutral tint. On the walls were several pictures, among which I noticed portraits of Pius IX., Leo XIII., Cardinal Wiseman and King Edward the Confessor.

While I was turning over the pages of a work on the Roman antiquities the library door opened, and a tall, slender, delicate figure glided into the room. The small red cap told me I was in the presence of the Cardinal Archbishop of Westminister, Henry Edward Manning. His simple, gentle manners made me feel at home at once. His voice was singularly sweet and winning, but exquisitely modulated.

I found the Cardinal deeply interested in the United States. Like many of his intelligent countrymen, he looks upon America as the country of the future, where the mental and the physical development of mankind are destined to attain their perfection. The Cardinal is greatly interested in the temperance cause, and attributes most of the misery of the poorer classes to the vice of intemperance. The Irishman drinks from joviality, the Englishman from brutality, and it is easier to reform an Irish than an English drunkard.

It is not generally known that Cardinal Manning was a married man. While an Arch-deacon in the Church of England he married Miss Serjeant, whose two sisters married Bishop Wilberforce and Henry Wilberforce, his brother. Mrs. Manning lived only a few months after her marriage, and her death filled the sensitive soul of her husband with a deep and lasting sorrow, and turned him more and more to a life of entire spirituality. Cardinal Manning was born in 1809, the same year that witnessed the birth of Alfred Tennyson. His father was a member of Parliament and Governor of the Bank of England. Young Manning, after a preparatory education at Harrow, entered Balliol College, Oxford, where he distinguished himself no less by his scholarship than by the polish of his manners. He became a fellow of Merton College at the early age of twenty-four, and Archdeacon of Chichester before he was thirty-three. At that age the future Cardinal Archbishop seemed very far from the Catholic Church, for just at that time he preached so violent a tirade against "Popery" that Dr. Newman, who was then preparing to join the church, declined to see him the next time he called. While holding orders in the Church of England, Dr. Manning maintained the spiritual grace of baptism, and when this doctrine was denied by Mr. Gorham, and the view of the latter was pronounced tenable by the Church of England, Manning "felt the very ground on which he stood cut from under him," and shaking from his feet the dust of the church of his ancestors entered the Church of Rome. His rise was rapid. He founded the order of Oblates of St. Charles of Borromeo, was raised to provost of Westminister, and became a great favorite of Cardinal Wiseman, who recommended him to the Holy See as worthy of the honorary title of Monsignor. When Wiseman died, in 1865, Pope Pius IX. raised Monsignor Manning to the vacant See of Westminster, and in 1875 he was created a Cardinal.

Cardinal Manning is a frequent guest at luxurious banquets, but the ascetic churchman in the midst of such feasts makes his dinner off a baked potato, a piece of beef, and a glass of water. The Cardinal is an early riser, getting up at five in summer and six in winter. After half an hour's meditation, he says mass in his private chapel, and then passes thirty minutes in thanksgiving. He breakfasts at seven in summer and eight in winter, and then passes an hour or two over his correspondence, and devotes the rest of the morning to literary work, and to matters belonging to his archdiocese.—*Eugene L. Didier, in Epoch.*

## A Red Top-Knot.

Two ladies were purchasing mufflers at the counter of a leading clothing store. Said one, turning to her friend: "I am buying this for Albert D——. How do you like it?"

"Very handsome," returned the friend, admiringly, "but it is pink and Albert D—— has red hair! You must get a blue one."

"We are out of blue mufflers," said the obliging clerk, as he placed the pink one in a more inviting light.

"Red and pink can not go together," said the friend, decidedly.

"He—he—might dye his hair?" sug the clerk, facetiously.

"That's so," said the customer, with a sigh of relief, "I'll take it. I'm not responsible for his hair any way," she added, as she paid the bill.—*Detroit Free Press.*

—Never set the lamp upon a red table-cover; if you can not find time to make a green lamp-mat, put a piece of green card-board under the lamp, and you will find the reflection upon your work much more agreeable to the eyes than that from the red cover.

## SCIENCE AND INDUSTRY.

—Submarine divers now use the electric light with considerable success.

—Dr. Scheuerlin, of Berlin, has inoculated dogs with the newly discovered bacillus of cancer. So far no cancer symptoms have been developed.

—An ether-tight joint can be made with a screw-cap by just rubbing common bar soap in the thread. The ether will not penetrate through the soap.

—The first recorded photograph of a rainbow has been exhibited to the Photographic Association of London. The arch has the appearance of something solid—like an arch of wood.

—It is estimated that pin factories in New England turn out 10,800,000,000 pins yearly and that other factories in the States bring the number up to 18,000,000,000. This is equal to about one pin a day for every inhabitant of the United States.

—A physician recommends that all the wood used in the interior construction of houses and all the plain surfaces of plaster should be thoroughly oiled or varnished so that the power of absorption of foul air and gases may be destroyed.

—The nettle is among the substances which science has put to use during the past few years. This weed is even being cultivated in Germany, its fiber having proven valuable for a variety of textile fabrics. In Dresden a thread is produced from it so fine that a length of sixty miles weighs only two and a half pounds.

—At a late meeting in London, Dr. E. P. Thwing stated that Americans are more susceptible to the influence of alcohol than Englishmen, and that they are more affected by tobacco than the Hollanders, Turks or Chinese. This he supposes to be due to an increased sensitiveness of the nervous system, induced by the high-pressure life of this country.

—What has been designated as "The Savagery of Boyhood" has become a subject for scientific investigation. There seems to be a division of opinion on the subject. Some hold that a boy is naturally and inherently a savage, while others contend that his savagery is more owing to false education and the evil example of adults than to his own inborn nature. We are inclined to the opinion that each of these theories has some truth in it.

—Gum tragacanth is collected from plants in Asia Minor, the greater part being shipped from Smyrna. Formerly only what exuded spontaneously was gathered, but now the flow of the gum is aided and induced by incisions near the root, and the product is the fine, white, flaky variety, so much valued in commerce. The flow takes place during the night, and the hot and dry weather is the most favorable period.

—Gastro-intestinal catarrh, with a disordered condition of the nervous system and considerable depression, is the usual result following the ingestion of poisonous fungi. In treating these cases the stomach and bowels must be thoroughly emptied, and the prominent symptons are to be relieved according as they occur. After free vomiting and purgation have been induced, rest in bed, with stimulants and warmth, are beneficial.

—It appears that special attention is being paid in France and England to a more general substitution of iron and steel for wood, wherever practicable, in manufactured articles, such, for instance, as building materials, boxes and packing cases, barrels or casks, carriages or carts, and other vehicles, furniture, fencing, railway work, sheds, signal boxes, telegraph poles, etc. In France there have recently come in use hollow-iron window frames and doors, which are said to be light and strong and of far greater durability than could ever be assumed of wood. There is no reason, too, it is thought, why corrugated barrels of iron or steel should not be used for liquors, since milk and preserved fruits and other articles are kept in cans. Steel is finding much favor among carriage builders, but there is still much prejudice against the metal being used in the manufacture of furniture.

## THE PATENT FIEND.

**He Invents a Safety Shoe Which Lands Him in a Safe Resort.**

"Want to make $50,000 this winter?" queried a hawk-eyed man with a lap-shoulder to a shoe-dealer on Michigan avenue yesterday.

"Of course."

"Then buy my patent."

He unrolled a package and brought to light a shoe, a tin funnel and a quart of wood ashes.

"What on earth is it?" asked the dealer.

"It is Bronson's Patent Safety Shoe. Here's the idea: In winter our sidewalks are dangerous from ice. By sprinkling ashes on ice you produce decomposition and render travel safe. Do you follow?"

"But——?"

"Of course you don't, but I'll explain. This is a double-soled shoe. There is a space between the two soles, and the toe and heel ends are open. You fill this space with ashes and as you walk it flips out in advance of you."

"The idea!"

"Yes, I worked twenty-two years on the idea. The funnel fits into the heel of the shoe, and is used to load up with."

"But the ashes?"

"O, you hire a boy to follow you with a pail of them. When the shoe is empty you whistle and he loads it up again. There's nothing like it. I can walk twenty miles a day over a perfect glare of ice. Will you give me an order?"

"No, sir. It's the most ridiculous thing I ever heard of."

"It is, eh! You'll see whether it is or not before the winter is over! I'll sell enough to buy you out and throw your stock into the river!"

An hour later he was arrested for being drunk and hilarious, and as he went down in the wagon he was explaining to the officer:

"You puz on 'er shoe, you know, an' you puz in 'er ashes, you know, an' you walk on 'er ice an' 'er patrol wagon comes 'long an' gives you sleigh-ride."—*Detroit Free Press.*

## FARM AND FIRESIDE.

—Make a little land rich, and there will be no need to scratch over a large farm.

—The question is not what could be done if we had certain other things, but what can we do to make the most of what we have.

—A sheep well fed and protected during the winter will yield in the spring two pounds more of wool than one that has been half starved.

—When butter is gathered in the churn in granular form, it is never overchurned. Pounding it after it is in a lump or large mass is what overchurns it.

—Creamed Apples:—Pare your fruit and either scald or bake it until sufficiently soft to pulp it through a colander; sweeten to taste, fill your glasses three parts full with it, then plentifully sprinkle in some powdered cinnamon, put a good layer of rich whipped cream on the top and sift white sugar over it.

—A little meal stirred into a pail of water gives it a relishable flavor, and induces a cow to drink more, besides affording some additional nourishment. If the temperature of the water is first raised to seventy or eighty degrees, it is all the better, since the cow will drink more warm water than she will cold.

—To prepare zante currants for cake, put them in a colander, set the colander in a large pan of water, and unless there are stones in, the sand and stems will all settle in the pan. If you wash the currants thoroughly in this way, you will be surprised at the results, as it takes less time and water than in the old way, and it is so much easier to rub them clean.

—The bones of a well-bred, well-fed hog are said to present only about one-twentieth part of his gross weight. An animal of this nature must necessarily carry a great deal of fat, but the importance of making it well muscled to keep it from complete degeneracy is self-evident to any thoughtful person; hence, inasmuch as the natural tendency of the hog is to fat, feeders should make it a point to counteract the evil by using the most nutritious feed to the exclusion of fat-forming food

## ABOUT MANURING.

**The Use of Commercial Fertilizers and the Plowing Under of Clover.**

In opening this article I submit these general propositions: First, to grow a crop of any kind profitably it is necessary to have sufficient plant food in the soil in an available form to produce a maximum crop. Second, this may be attained by the application of manure or commercial fertilizers, or, on soils which have plant food in an unavailable form in the subsoil, clover plowed down will have the same effect. Clover is a wonderful renovator of the soil. I am not of the opinion, however, that it adds any fertilizing material to the soil, but renders available that which is in the soil, and pumps up the plant food in the subsoils. I am in favor of making, saving and applying all the manure that can be made upon the farm, and believe in sowing clover upon all tillable land where it is a benefit to the soil.

I am in favor of "green manuring" so far as it can be practiced advantageously. The trouble with barnyard manure is that there is never enough. The trouble with clover and green manure is, that while they are good so far as they go, they do not go far enough on naturally thin soils to amount to much in the way of fertilizing the soil for a crop without the previous application of manure or commercial fertilizers. I think, therefore, that commercial fertilizers have come to be a necessity in this section of country, especially in the growing of wheat, oats and grass. I believe in carefully husbanding all the manure we can make. I also believe it is economical and good farming to apply this on land to be put in corn, potatoes and other crops that are to be planted in spring, and use commercial fertilizers on wheat and oats. Those who have a soil on which fertilizers can be used with success will find it to their advantage to follow this course. Of course every farmer must be his own judge, according to location, soil, etc., but I speak of farmers situated similarly to those in this section of country. We are distant from any large city and must therefore depend on general farming. I submit some figures to show the correctness of position:

The expense of hauling and spreading barnyard manure is a big thing. Besides in the busy part of the season it is a slow process. My estimate is for 25 two horse wagon loads per acre. I do not know what it costs others, but I have carefully estimated the time for team and hands at different times and on an average it costs in labor 30 cents a load or $7.50 for 25 loads. Some of it has to be hauled a half mile, and some, of course, but a short distance. Four hundred pounds of best fertilizers at $1.70 per 100 lbs., cost $6.80; hauling it 5 cts. per 100 lbs., is 20 cents; applying it at 50 cents per acre is 50 cents; making a total of $7.50. In other words it costs as much to apply the manure after it is made as it does to buy, haul and apply 400 lbs. of the best commercial fertilizers. That is not all. The fertilizer will produce double the amount of wheat, and just as much grass if it is left for a meadow.

My plan is to haul out the manure directly from the barn (without composting) to the field on which I expect to plant corn or potatoes, during the fall, winter and early spring, and spread it upon the sod at the rate of 20 to 30 tons per acre. I plow this sod 5 inches deep for corn or potatoes. By means of shallow plowing and good cultivation I get the full benefit of the manure. I think it a good plan to follow corn with oats and apply from 200 pounds to 300 pounds of a quick-acting standard fertilizer. Follow the oats with wheat, with 300 to 400 pounds of standard fertilizer meal, (or meal and superphosphate mixed) and sow to timothy in the fall and clover in the spring for a meadow, or if desired sow blue and orchard grass with timothy for permanent pasture. Avoid the use of acid fertilizers containing Carolina rock. If the after management of the fields is correct, I think no one will have reason to regret the investment.—*J. C. Edgerton, in Ohio Farmer.*